



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,014	06/16/2005	David Yen-Lung Chung	2003B133D	7413

23455 7590 05/02/2007  
EXXONMOBIL CHEMICAL COMPANY  
5200 BAYWAY DRIVE  
P.O. BOX 2149  
BAYTOWN, TX 77522-2149

EXAMINER
----------

RABAGO, ROBERTO

ART UNIT	PAPER NUMBER
----------	--------------

1713

MAIL DATE	DELIVERY MODE
-----------	---------------

05/02/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/539,014

Applicant(s)

CHUNG ET AL.

Examiner

Roberto Rábago

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-85 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-64 and 67-85 is/are rejected.
- 7) ☒ Claim(s) 65 and 66 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/16/2005; 2/12/2007; 2/27/2007.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/12/2007 has been entered.

### ***Comments on Claim Interpretation***

2. The claims have been amended to require that the parameter  $m$  is determined for each polymer by direct solution of the equation stated in the claims, based on determined values for  $A$  and  $F$ . Previously, a stated method of determining  $m$  was by a best-fit curve-fitting procedure over a spread of several values of  $A$  and  $F$  in a particular diluent, as previously recited in the specification at [0090] and [00212].

3. In reciting range endpoints for numerous claimed parameters, applicants have used the phrasing "from less than" and "from greater than". For example, in claim 1, the range for parameter  $m$  is claimed as "from less than 38." Consistent with the disclosure of the specification, this phrasing is interpreted to have the same meaning as if the word "from" were absent; i.e., "from less than 38" is identical in scope to "less than 38."

Therefore the word "from" adds no limitation or meaning to the phrases "from greater than" and "from less than". If applicants disagree with this interpretation, they should either amend the claims to recite an alternative meaning, or explain the alternative meaning and identify support in the specification as filed.

***Information Disclosure Statement***

4. The information disclosure statement filed 2/27/2007 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the Matyjaszewski reference has not been considered because applicants' submission consisted of nothing but the title page and publication page.

5. The information disclosure statement filed 6/16/2005 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the lined-through references, consisting of references without an integral English language abstract, have not been considered. The abstracts for these references which are included in the IDS as separate entries have been considered on the basis of their English language content.

The initialed foreign language references cited on any of Applicants' IDS forms have been considered solely on the basis of their attached English language abstracts, and any discussion thereof in the specification.

***Claim Rejections - 35 USC § 112***

6. Claims 71-83 and 85 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 71 (and claims 72-83 and 85 as dependent thereon), it cannot be determined whether the claim is intending to require that the resultant copolymer have the recited drawn structure, or whether the intention is to require that the monomer from which the polymer is made have the required functionalities. The ambiguity arises because the language of the first two lines of the claim identifies isoolefin and alkylstyrene (i.e., as monomers), yet the drawn structure is clearly referring to a polymerized segment derived from a molecule of alkylstyrene.

***Claim Rejections - 35 USC § 102 and/or 103***

7. Claims 1-11 and 84 are rejected under 35 U.S.C. 102(b) as being anticipated by Powers et al. (US 5,162,445).

The reference discloses in Example 95 copolymerization of p-methylstyrene (pMS) and isobutylene in chlorinated solvent comprising a range of pMS content of 4.7 through 100 wt%. The reference has not reported the parameter m; however, the

declaration of T.D. Shaffer filed 2/12/2007 has revealed that the value of  $m$  for copolymers made in conventional solvents such as methylene chloride is a function of pMS fraction in the polymer, with a clear trend of decreasing  $m$  as pMS fraction increases. Applicants' Example 149 shows that at approximately 8 mol% pMS, the claimed value of  $m < 38$  is obtained. Although the specification states this example to be a Comparative Example, it includes several samples within the claimed scope of  $m < 38$ . Clearly, the use of hydrofluorocarbons diluents is not required to obtain the claimed polymers when using conventional solvents and catalysts. Accordingly, given the broad range of pMS contents shown in Powers Example 95, the claimed values of  $m$ , including less than 30, would be expected for the disclosed examples at greater than 20 wt% pMS. The burden of proof is shifted to applicants to show that the reference examples do not include the claimed values of  $m$ .

8. Claims 12-64 and 67-70 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Powers et al. (US 5,162,445).

The reference discloses in Example 95 copolymerization of p-methylstyrene (pMS) and isobutylene in chlorinated solvent comprising a range of pMS content of 4.7 through 100 wt%. The reference has not reported the parameter  $m$ ; however, the declaration of T.D. Shaffer filed 2/12/2007 has revealed that the value of  $m$  for copolymers made in conventional solvents such as methylene chloride is a function of pMS fraction in the polymer, with a clear trend of decreasing  $m$  as pMS fraction

Art Unit: 1713

increases. Applicants' Example 149 shows that at approximately 8 mol% p MS, the claimed value of  $m < 38$  is obtained. Although the specification states this example to be a Comparative Example, it includes several samples within the claimed scope of  $m < 38$ . Clearly, the use of hydrofluorocarbons diluents is not required to obtain the claimed polymers when using conventional solvents and catalysts. Accordingly, given the broad range of pMS contents shown in Powers Example 95, the claimed values of  $m$ , including less than 30, would be expected for the disclosed examples at greater than 20 wt% pMS. The reference has also not reported the  $M_w$ , MWD or Mooney viscosity. However, the claimed MWD would appear to be inherent because the reference states that the preferred range is less than about 4 or less than 2.5 (col. 6, lines 55-59), the claimed  $M_w$  would appear to be inherent because most of the analogous examples (e.g., Examples 90-93) have the claimed molecular weight, and the claimed Mooney viscosity would appear to be inherent because applicants have claimed the majority of conventional values for Mooney viscosity for the type of polymers disclosed in Powers. The burden of proof is shifted to applicants to show that the reference examples do not include the claimed unreported values.

Regarding the additional product-by-process limitations, the record contains no basis to conclude that the specified process steps would exclude the reference products from the broad scope of the claims; if any differences exist between the reference products and those made according to the claimed process, such differences would be expected to be minor and obvious.

9. Claims 71-83 and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers et al. (US 5,162,445).

The reference discloses in Example 95 copolymerization of p-methylstyrene (pMS) and isobutylene in chlorinated solvent comprising a range of pMS content of 4.7 through 100 wt%. The reference has not reported the parameter  $m$ ; however, the declaration of T.D. Shaffer filed 2/12/2007 has revealed that the value of  $m$  for copolymers made in conventional solvents such as methylene chloride is a function of pMS fraction in the polymer, with a clear trend of decreasing  $m$  as pMS fraction increases. Applicants' Example 149 shows that at approximately 8 mol% pMS, the claimed value of  $m < 38$  is obtained. Although the specification states this example to be a Comparative Example, it includes several samples within the claimed scope of  $m < 38$ . Clearly, the use of hydrofluorocarbons diluents is not required to obtain the claimed polymers when using conventional solvents and catalysts. Accordingly, given the broad range of pMS contents shown in Powers Example 95, the claimed values of  $m$ , including less than 30, would be expected for the disclosed examples at greater than 20 wt% pMS. The burden of proof is shifted to applicants to show that the reference examples do not include the claimed unreported values.

The examples do not include the claimed halogenation or functionalization, or the use of a blend component. However, one of ordinary skill in the art would be motivated to use these embodiments because they are suggested at col. 9, line 45 through col. 10, line 55.



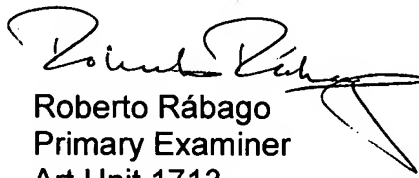
***Allowable Subject Matter***

10. Claims 65 and 66 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberto Rábago whose telephone number is (571) 272-1109. The examiner can normally be reached on Monday - Friday from 8:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Roberto Rábago  
Primary Examiner  
Art Unit 1713

RR  
April 28, 2007